MEMORY

PSYC 308-001
Spring 2014
MWF 2:00-2:50 pm, SEWALL 303

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COURSE DESCRIPTION
Memory has been a human fascination for as long as we have been able to reflect on how we experience the world. Countless novels, movies and other works of art have explored what we remember, how we remember and why we remember. In this course, we will focus on research that applies scientific methods to the study of memory, with the goal of understanding how studying memory in the lab is qualitatively different from exploring memory in the Arts and Humanities. Using these methods we will ask questions like: Is memory one unified thing, or are our minds made up of multiple memory systems? What causes us to forget? How is memory instantiated in the brain? What can students do to better retain the material they have been taught?

COURSE OBJECTIVES
1. Learn what scientific psychology has taught us about human memory, in particular the current theories of how memory works.
2. Learn to think like a psychologist as you read, evaluate, and discuss empirical research.
3. Evaluate what contributions can be made by applying the scientific method to the study of memory.

REQUIRED MATERIALS
1. Textbook: Alan Baddeley, Michael Eysenck and Michael Anderson's *Memory*, 2009, Psychology Press. To access the online resources associated with this book, go to http://psychology-textbooks.com/login/signup.php and create an account. The enrollment key for this class is "rice." From this website, you will have access to practice test questions and interactive exercises, among other things.
2. Supplemental textbook chapters: A few topics in the course are not covered well by the Baddeley et al. textbook. For those topics, there will be copies of chapters from other textbooks (John Anderson's *Learning and memory: An integrated approach*; Howard Eichenbaum's *The cognitive neuroscience of memory: An introduction*) available on OWLSpace.
3. Journal articles: For many topics, there will be required journal article assigned each week. I will post them on OWLspace. You must read the article(s) before class and come prepared to discuss. For some journal articles (noted in the syllabus) you will also be required to post a short response to the article in the Discussion section on OWLSpace.
4. OWLSpace access: I will use OWLSpace to post announcements, journal articles, assignments, lecture slides and other course materials, as well as grades. You will be required to use OWLSpace to turn in your written assignments and to contribute to discussions of papers. Please check this website often; you are responsible for the information on it.

COURSE REQUIREMENTS
1. Exams
There will be two in-class exams. Each exam will be a mix of multiple choice and short answer questions based on the text, articles, and material presented during class.

2. Written Assignments
There will be three written assignments, each 4-5 pages (double-spaced) in length. Each assignment will require you to read several papers, describe why the authors undertook the study, what they did and what they found, and present you own **analysis** of the articles. In addition, there will be a specific set of issues you will be expected to address in your paper that differs for each written assignment. The papers, assignments and grading rubrics will be posted on OWLSpace 10 days to 2 weeks prior to the assignment due date. Your papers must be submitted via OWLSpace by the start of the class on the day that they are due (2 PM on February 5th for Assignment #1, 2 PM on March 21st for Assignment #2 and 2 PM on April 18th for Assignment #3). All papers should be uploaded in Microsoft Word format, with the file name

"LastName_FirstInitial_AssignmentNumber." Late papers will lose 3 points (they are each worth 30 total) for each day they are late, starting at 2:01 PM.

3. Discussion on OWLSpace

Throughout the semester, there will be periodic in-class discussions. These discussions will often center on a research article, though occasionally the discussion will focus on a movie that we will watch outside of class, a popular press article or a short-story that relates to memory. Prior to these discussions, you will be responsible for contributing to an online discussion. **TO GET FULL CREDIT FOR YOUR COMMENT OR QUESTION, PLEASE POST IT ONLINE BY NOON THE DAY OF THE DISCUSSION.** By posting early, you will allow me to incorporate the online discussion into the in-class discussion. By my count, there are **16** of these discussions in total. To get full credit for discussions on OWLSpace, you are responsible for posting comments in **10** of the online discussions. Full credit will be given to posts that are both posted on time and reflect serious consideration of the topic. **YOU ARE RESPONSIBLE FOR ALL OF THE READINGS, AND ARE EXPECTED TO PARTICIPATE IN ALL OF THE IN-CLASS DISCUSSION.**

4. In-Class Participation

5% of you grade will credit in class participation. During class, aim to share your ideas freely and support your arguments thoughtfully; talk with each other, not just to me. Everyone is expected to participate in our in-class discussions.

Makeup Policy

You are expected to take all exams and turn in all assignments at the times listed in the Course Schedule. In accordance with university policy, an exception to the "no makeup" rule occurs if there is a conflict with a university sponsored extracurricular activity. If an exam or assignment due date conflicts with a university sponsored activity, you must inform me *in writing* at least one week prior to the exam or due date. Failure to attend an exam without prior notice and approval will result in a zero on that exam, except in the case of a ***documented*** medical emergency or crisis.

EXTRA CREDIT

A student may earn up to 5 points of extra credit in one of the following two methods:

1. Participate in psychology experiments. A student can sign up for participation in psychology experiments by going to http://experimetrix2.com/Rice. A copy of the department policy on the use of human subjects is available on the Psychology Department's website. Each one-hour experiment is worth 1 point of extra credit. Your experiment hours must be assigned to this class; please contact the TA if you have questions about how to do this.

2. Write a two-page reaction paper on a memory-related research article published within the past two years (not assigned). **You must meet with me in advance (at least 2 weeks before the last day of class) if you wish to exercise this option;** research reports will receive a grade of "satisfactory" or "unsatisfactory." Each satisfactory report is worth 1 points of extra credit.

All extra credit must be completed (in the case of experiments) or uploaded to OWLSpace (in the case of research reports) by 5 PM on the last **day** of classes. I may also choose to offer additional extra credit opportunities throughout the semester in the form of quizzes on required readings or previous lectures. If you miss class on the day a quiz is given, you may not make up that extra credit for any reason, *even if your absence is excused*.

GRADING

Your grade for this class will be based on:

Two unit exams	40%	(40 points each)
Written Assignments	45%	(30 points each)
Comments posted on OWLSpace	10%	(20 points)
Class participation	5%	(10 points)

In total it is possible to earn 200 points, plus any extra credit points that you accumulate. Throughout the semester, your grades for written assignments, OWLSpace discussion comments and exams will be posted on OWLSpace; check your grades frequently! To calculate your grade at the end of the semester, simply add up all the points that you've earned from tests, papers, quizzes, and extra credit and then divide by 200. Feel free to contact me at any time to discuss your grade.

Letter grades will be calculated on the following scale:

97-100%	A+	77-79%	C+
93-96%	A	73-76%	C
90-92%	A-	70-72%	C-
87-89%	B+	67-69%	D+
83-86%	B	63-66%	D
80-82%	B-	60-62%	D-
		<60%	F

HONOR POLICY

Students are expected to follow the Rice Honor System; the Honor Code applies to all exams and written assignments in this class. Your written assignments must be entirely your own work. Of course, discussing the articles and findings presented in lectures with other classmates is encouraged; however, the ideas presented in the papers that you submit should be your own. Violations of the Honor Policy will not be tolerated in this class; if you violate the Honor Policy on any assignment or exam, you will be punished according to the guidelines and procedure set forward in the Honor Code. Information regarding the Honor Code and Honor Council can be found online at http://honor.rice.edu/. Feel free to ask me to clarify anything that you do not understand. At the end of the syllabus, you will find a detailed explanation of the relevant areas of the Honor Code, as well as specific guidelines for what is permissible in this class.

AMERICANS WITH DISABILITIES ACT (ADA)

The ADA requires that all qualified persons should have equal opportunity and access to education regardless of the presence of any disabling conditions. Any student with a documented disability needing academic adjustments or accomodations should speak to me within the first two weeks of class. Students with disabilities should also contact Disability Support Services at 713-348-5841 or via their website www.dss.rice.edu.

COURSE CALENDAR

**Note: This schedule is a guide for the course and is subject to change with advance notice. Such changes will be announced on OWLSpace, and in class when possible.

Jan 13th Course overview

Jan 15th Memory: The broader perspective

- "Marcel Proust" from *Proust was a Neuroscientist* by Jonah Lehrer
- OWLSPACE Discussion: Lehrer

Jan 17th Memory: What can psychology add?

- Textbook: Baddeley Chapter 1
- Neisser, U. (1982). Memory: What are the Important Questions? In Neisser, U. & Hyman, I. (Eds). *Memory observed: Remembering in natural contexts,* New York: MacMillan
- OWLSPACE Discussion: Neisser (1982)

Part 1: Carving Memory at its Joints

Jan 22nd Short-term vs. Long-term memory

- Textbook: Baddeley Chapters 2/3
- Shallice, T. & Warrington, E.K. (1970). Independent functioning of verbal memory stores: A neuropsychological study. *Quarterly Journal of Experimental Psychology, 22*, 261-273.
- *Evening: Memento, time and place TBD*
- Written Assignment #1 given out: *Flashbulb memories: A special type of memory?*

Jan 24th Amnesia: An introduction to the pattern

- Eichenbaum Chapter 4
- OWLSPACE Discussion: Memento

Jan 27th Episodic Memory vs. Semantic Memory

- Textbook: Baddeley Chapter 5/6
- Tulving, E., Schacter, D. L., McLachlan, D. R., & Moscovitch, M. (1988). Priming of semantic autobiographical knowledge: A case study of retrograde amnesia. *Brain and Cognition, 8,* 2-20.

Jan 29th Implicit vs. Explicit Memory

- Roediger, H. L. (1990). Implicit memory: Retention without remembering. *American Psychologist, 45*(9), 1043-1056.

Jan 31st What is an episodic memory?

- Redelmeier, D.A. & Kahneman, D. (1996) Patients' memories of painful medical treatments: real-time and retrospective evaluations of two minimally invasive procedures. *Pain, 66,* 3-8.
- OWLSPACE Discussion: Redelmeier & Kahneman (1996)

Feb 3rd Consolidation and the Long Term/Short-term Distinction

- Meeter, M. & Murre, J.M.P. (2004). Consolidation of long-term memory: Evidence and alternatives. *Psychological Bulletin, 130,* 843-857.

Feb 5th Autobiographical Memory: A special type of memory?

- Textbook: Baddeley, Chapter 7
- Written Assignment #1 DUE, Flashbulb Memory Discussion

Feb 7th Individual differences in memory

- New York Times Magazine Article: "Can you make yourself smarter?" April 18th, 2012
- OWLSPACE Discussion: Memory training and intelligence

Part 2: Mechanisms of Learning & Memory

Feb 10th Classical and Operant Conditioning

- Textbook: Anderson, Chapter 2,3

Feb 12th Conditioning and human learning/memory

- Freeman, D.H. (June 2012). The Perfected Self. The Atlantic Magazine
  OWLSPACE Discussion: Freeman (2012)

Feb 14th Encoding and Retrieval from Long-Term Memory

- Textbook: Baddeley Chapter 8

Feb 17th Recognition & Signal Detection Theory

- Yoelinas, A.P. (1997) Recognition memory ROCs for item and associative information: the contribution of recollection and familiarity. *Memory and Cognition, 25,* 747-763.

Feb 19th Incidental Forgetting

- Textbook Reading: Baddeley Chapter 9
- Wixted, J. T. (2005) A theory about why we forget what we once knew. *Current Directions in Psychological Science, 14,* 6-9.

Feb 21st Schemas and Memory

- Brewer, W.F. & Treyens, J.C. (1981). Role of schemata in memory for places. *Cognitive Psychology, 13,* 207-230.
- OWLSPACE Discussion: Brewer & Treyens, 1981

Feb 24th Why do we need to forget?

- Parker, E.S., Cahill, L. & McGaugh, J.L. (2006). A case of unusual autobiographical remembering. *Neurocase, 12*, 35-49.
- Jorge Luis Borges: Funes the Memorious
- OWLSPACE Discussion: Either – Parker, Cahill & McGaugh (2006) or Borges

Feb 26th Exam # 1

Feb 28th Evolutionary contributions to memory

- Nairne, J. S., & Pandeirada, J. N. S. (2008). Adaptive memory: Remembering with a stone-age brain. *Current Directions in Psychological Science*, 17, 239-243.
- OWLSPACE Discussion: Nairne & Pandeirada (2008)

Part 3: Biological Basis of Memory

Mar 10th Neuronal basis of memory at the single cells level

- Alternative Textbook (on OWLSpace): Eichenbaum Chapter 2
- Written Assignment #2 given out: *Are memories distributed or localized in the brain?*

Mar 12th Neuronal basis of memory, LTP and complex circuits

- Alternative Textbook (on OWLSpace): Eichenbaum Chapter 3
- Morris, R.G.M., Anderson, E., Lynch G.S. & Baudry, M. (1986) Selective impairment of learning and blockade of long-term potentiation by an N-meythl-D-aspartate receptor anatagonist, AP5. *Nature, 319,* 774-776.

Mar 14th Is addiction a memory disease?

- Hyman, S. E. (2005). Addiction: A Disease of Learning and Memory, American Journal of Psychiatry, 162, 1414-1422.
- OWLSPACE Discussion: Hyne (2005)

Mar 17th Hippocampal contributions to memory

- Alternative Textbook (on OWLSpace): Eichenbaum Chapter 5

Mar 19th Imaging memory

- Paller, K.A. & Wagner, A.D. (2002). Observing the transformation of experience into memory. *TRENDS in Cognitive Science, 6,* 93-102.

Mar 21st What can neuroimaging tell us about memory?

- Coltheart, M. (2006) What has functional neuroimaging told us about the mind (so far)? *Cortex, 42*, 323-331.
- Henson, R.N.A. (2006) What has functional neuroimaging told us about the mind (so far)? A reply to Coltheart (2006). *Cortex, 42,* 387-392.
- OWLSPACE Discussion: Both Coltheart (2006) and Henson (2006)
- Written Assignment #2 Due

Part 4: Applied Memory Research

Mar 24th Memory across the lifespan: Childhood memory

- Textbook Reading: Baddeley Chapter 12

Mar 26th Memory across the lifespan: Aging

- Textbook Reading: Baddeley Chapter 13

Mar 28th Memory across the lifespan: Dementia

- Read: Munro "A bear went over the mountain"
- OWLSPACE Discussion: Munro

Mar 31st Memory in the classroom: The testing effect

- Roediger, H.L., & Karpicke, J.D. (2006). Test-enhanced learning: Taking memory tests improves long-term retention. *Psychological Science*, 17, 249-255.

Apr 2nd Memory in the classroom: The spacing effect

- Greene, R.L. (2008). Repetition and Spacing Effects. In Byrne, J.H. (ed). *Language and Memory: A comprehensive reference.*
- Written Assignment #3 given out: *Can you take a pill to improve your memory?*

Apr 7th Memory in the classroom: Techniques to improve your memory

- Textbook Reading: Baddeley Chapter 16
- Joshua Foer "Secrets of a Mind-Gamer" *New York Times Magazine*, January 15th, 2011
- OWLSPACE Discussion: Foer

Apr 9th Memory and Law: Eyewitness testimony

- Roediger, H.L., & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory and Cognition, 24,* 803-814.
- Textbook: Baddeley Chapter 14

Apr 11th Memory and Law: Repressed memory

- Loftus, E. (1993). The Reality of Repressed Memories, *American Psychologist, 48,* 518-537.
- New Yorker Article: "Remembering Satan: Parts 1 & 2" May 17 & 24th, 1993
- OWLSPACE Discussion: Both Loftus (1993) and New Yorker article

Apr 14th Lifestyle influences on memory: Exercise

- Erickson, K.I. et al., (2011). Exercise training increases size of hippocampus and improves memory. *Proceedings of the National Academy of Sciences, 108,* 3017-3022.

Apr 16th Lifestyle influences on memory: The Role of Sleep

- Walker, M.P. (2008). Sleep-Dependent memory processing, *Harvard Review of Psychiatry, 16,* 287-298.

Apr 18th Lifestyle influences on memory: Diet

- Written Assignment #3 DUE

Apr 21st Future of memory: Has Google destroyed our memory?

- Sparrow, B. Liu, J. & Wegner, D.M. (2011). Google effects on memory: Cognitive consequences of having information at our fingertips. Science, 333, 776-778.
- Excerpt of Clive Thompson's *Smarter than You Think: How Technology is Changing Our Minds for the Better*
- OWLSPACE Discussion: How does technology change the important questions in memory research?
- *Evening: Eternal Sunshine of the Spotless Mind, Time and Place TBD*

Apr 23rd Future of memory: Implanting, enhancing and erasing memories

- Jadhav, S.P., Kemere, C., German, P.W. & Frank, L.M. (2012). Awake hippocampal sharp-wave ripples support spatial memory. *Science*
- OWLSPACE Discussion: Eternal Sunshine of the Spotless Mind

Apr 25th Exam # 2

ADDITIONAL INFORMATION

Submitting items to OWLspace

Written assignments must be submitted through the Assignments section of OWLSpace. For each assignment, a link will appear; click on that link to view the assignment and upload a Microsoft Word version of your paper. All written assignments should have file names in the following format: LastName_FirstInitial_AssignmentNumber; for example, Fischer-Baum_S_1. Once your assignment is submitted, it cannot be withdrawn. Your submission is timestamped, so be sure to submit each assignment before the time specified in the syllabus.

Honor guidelines for papers and written assignments

Citations and References

If you use information from an outside source in one of your written assignments, that source should be properly cited in APA format. For example, "Smith and Jonides (1997) claim that executive processes activate the dorsolateral prefrontal cortex." Taking information from an outside source without citing that source is considered plagiarism; this includes summarizing information presented in another source, even if you change the wording. To be safe, you should always cite. All papers with in-text citations should include a References section.

Collaboration/group work

Collaboration is not allowed on any assignment in this class. Your written assignments should be entirely your own work. Of course, discussing the articles and findings presented in lectures with other classmates is encouraged; however, the ideas presented in the papers that you submit should be your own.

Study groups

Sharing class notes with other students is allowed, and you are encouraged to form study groups for the exams.